

# MEASURING INSTRUMENTS

## ION SERIES

### Microbalances | Semi-Microbalances | Analytical Balances

Weighing is at the heart of many laboratory processes and the Ion Series offers the features, performance and standard accessories to bring real convenience to your lab. With the six balances of the Ion Series, you can choose a capacity as high as 520g or a microbalance with readability down to 1 $\mu$ g. The BM-20 and BM-22 let you handle with confidence even trade quantities of valuable or degradable substances.

Critical to precision weighing is static control, which is why the direct current fanless ionizer is standard on all models.

The automatic response adjustment function uses environmental data from built-in sensors to compensate the balance's characteristics to deliver fast and stable results. Calibration is also automatic and always available with a single key press. A range of accessories add extra convenience.

#### Removable Separation Plate

Enables weighing of taller objects in all models.



#### Large Weighing Chamber Improves Usability

The Ion Series offers more space and convenience than conventional 1 $\mu$ g balances that use a secondary breeze break.

#### Innovative Draft Shields



The BM-20 and BM-22 have a novel double-ring structure around the weighing pan, making an inner breeze break unnecessary.

#### Bright LCD

The high-contrast, backlit LCD provides excellent readability.

#### Automatic Response Function

The balance adjusts its response time (FAST, MED, SLOW) by analyzing the effects of drafts and vibrations on measurement stability.

#### Built-in Fanless Ionizer

The internal ionizer neutralizes charged samples and is standard on all BM models.



#### Automatic Self Calibration

The balance can self-calibrate automatically when it detects a charge in ambient temperature.

#### Anti-static Glass Breeze Break

Clear metal coating on glass minimizes the effects of static.



Press the ION key to neutralize static. The green LED is lit when the ionizer is on.

#### 10,000 Hour Lifetime

The electrode-discharge pins are also safely replaceable by the user.



The "door" symbol is displayed until both doors are completely closed.

#### Built-in Sensors Monitor the Environment:

- Temperature
- Humidity
- Vibration
- Atmospheric Pressure

#### Twelve Units of Weighing

g, mg, oz, ozt, ct, dwt, grain, momme, tael, tola, messghal, pieces (counting mode) and % (percent mode).

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## Microgram (µg) Measurements Made Simpler.

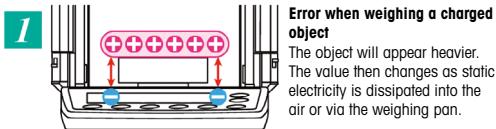
The BM-20 and BM-22 microbalances have the performance and standard accessories to simplify microgram measurements. The Ion Series now makes microgram (µg) measurements accessible to all researchers and offers a real choice in microbalances.

Ion Model	Capacity	Resolution
BM-20	22 g	0.001 mg (1 µg)
BM-22 (Smart Range)	5.1 g	0.001 mg (1 µg)
	22 g	0.01 mg (10 µg)
BM-252	250 g	0.01 mg (10 µg)
BM-200	220 g	0.1 mg
BM-300	320 g	0.1 mg
BM-500	520 g	0.1 mg

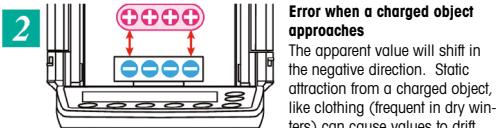
## Eliminate One of the Major Frustrations in Precision Weighing

### THE CHALLENGE

Static, while often overlooked, can seriously degrade precision weighing. An electrostatically charged object induces the opposite charge in nearby objects. The resulting attraction causes inaccuracies as shown below.



Filter papers, disposable weigh boats and plastic centrifuge containers can all become charged just from normal handling. And charged powders can be displaced, causing cross-contamination.



### THE SOLUTION

Better, Safer Measurements.

Understanding and removing static electricity is critical to accurate weighing. The built-in ionizer improves weighing by eliminating static. And because the direct current (DC) method is used, the

ionizer needs no fan. So, you can neutralize static in fine powders without the risk of compromising your sample.

Static control is so important the built-in ionizer is standard in all Ion Series balances. Simply hold the sample in the upper neutralizing chamber for a few seconds before weighing.



### Interlocking Doors

Use this feature to open either door from the opposite side, or open both doors with one hand. You work more quickly and efficiently when you can use both hands.

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## BM Series Specifications

MODEL	BM-20	BM-22	BM-252	BM-200	BM-300	BM-500
Weighing capacity	22g	5.1g/22g <sup>1</sup>	250g	220g	320g	520g
Minimum weighing value	0.001 mg	0.001 mg/0.01 mg	0.01 mg		0.1 mg	
Repeatability (Std Deviation)	0.0025 mg (for 1 g)	0.004 mg /0.01 mg	0.03 mg (for 100 g)	0.1 mg		0.2 mg
Linearity	±0.010 mg	±0.010 mg /±0.02 mg	±0.010 mg	±0.2 mg	±0.3 mg	±0.5 mg
Stabilization time (set to FAST)	Approx. 10 sec.	Approx 10/8 sec.	Approx 8 sec.		Approx. 3.5 sec.	
Sensitivity drift (10°C to 30°C)			±2 ppm / °C (When automatic self calibration is not used)			
Operating temperature			41°F to 104°F (5°C to 40°C); 85% RH or less (non-condensing)			
Display refresh rate			5 times/ second or 10 times/ second			
Measurement Units (Display mode)			g, mg, oz, ozt, ct, momme, dwt, GN, tael, tola, messghal, pieces (counting mode), % (percent mode), Specific gravity			
Counting mode			Minimum unit mass = 0.1 mg / Number of samples = 10, 25, 50 or 100 pieces			
Percent mode			Minimum 100% ref. mass = 10.0mg / Minimum 100% display = 0.01%, 0.1%, 1% (depends on the reference mass stored)			
Internal Memory		200 sets weighing data / 100 sets with date & time / 50 sets of calibration data				
External Data Logger		Store up to 5,000 weighing results with date & time to AD-1688 (standard)				
Data Output		GLP/GMP/GCP/ISO compliant. Outputs: balance manufacturer, model, s/n, balance identification number, date, time of calibration, mass used, and space for signature.				
Standard interface		RS-232C, Quick USB, External key plug for optional foot switch (SW-128)				
Internal calibration		Motor-driven internal calibration				
External calibration masses (g)	20, 10, 5, 2, 1	200, 100, 50, 20, 10	200, 100, 50	300, 200, 100, 50	500, 300, 300, 100, 50	
Ionizer electrode pin life		Approx. 10,000 hours of continuous use. (User replaceable)				
Weighing pan diameter	25mm (50mm, 95mm for weighing filters)			90-mm		
Power consumption		Approx. 30 VA (supplied by the AC adapter)				
External dimensions/Weight	259 (W) x 466 (D) x 326 (H)mm		Approx. 10 kg			

<sup>1</sup> Smart range function: The minimum weighing value switches to 0.01 mg automatically when the display value exceeds 5.1g but returns to 0.001 mg by pressing the RE-ZERO (tare) key.

## Standard Accessories and Features

All BM Series balances come with the AD-1688 Data Logger, A&D WIN-CT software, and are compliant with GLP/GMP/GCP/ISO industry best practices.



RS-232 and USB ports are standard on all BM Series balances.

### AD-1688 Weighing Data Logger

Stores up to 5,000 weighing results with date, time, temperature, humidity and atmospheric pressure. Download to a PC via USB port.



### Dedicated Weighing Pans for BM-20/22

The BM-20 and BM-22 include two filter weighing pans, designed to minimize the influence of drafts.

Also included with the BM-20 and BM-22 are holders for micro-centrifuge tubes and 3 sizes of disposable aluminum pans with diameters of 8, 12, 15 mm.



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BL-BM-20	22g capacity, 1 µg resolution.....	\$13,995.00
BL-BM-22	5.1g/22g capacity, 1/10µg resolution.....	12,995.00
BL-BM-252	250g capacity, 10µg resolution.....	7,995.00
BL-BM-200	220g capacity, 0.1mg resolution.....	6,295.00
BL-BM-300	320g capacity, 0.1mg resolution.....	6,595.00
BL-BM-500	520g capacity, 0.1mg resolution.....	6,995.00

## Accessories

BL-AD-1653	Density determination kit (for BM-252/200/300/500 only).....	535.00
BL-AD-1671	Anti-vibration Table (slab).....	1,295.00
BL-AD-1682	Rechargeable battery unit.....	658.00
BL-AD-1684	Electrostatic Fieldmeter .....	1,425.00
BL-AD-1688	Weighing Data Logger <sup>3</sup> .....	295.00
BL-AD-1689	Tweezers for calibration weight <sup>3</sup> .....	183.00
BL-AD-1192	Compact printer .....	455.00
BL-AD-8121B	Statistical printer .....	865.00
BL-AD-8920A	Remote display.....	260.00
BL-AD-8922A	Remote controller .....	615.00
BL-AX-BM-031	Display covers (5 pcs) .....	51.00
BL-AX-BM-NEEDLESET	Electrode units, For Ionizer .....	102.00
BL-KO:WW9/9	RS-232C cable (9p-9p, 2m) .....	38.00
BL-SW:128	Foot switch .....	72.00
BL-AX-T-314A-S	External key plug .....	91.00
BL-AX-USB-2920-9P	Serial/USB converter .....	51.00
BL-TB:248	AC Adapter <sup>3</sup> 120V/220V .....	41.00

<sup>3</sup> Included as standard with any BM Series balance

## Options

BL-BM-08 <sup>2</sup>	Ethernet interface with WinCT-Plus software .....	810.00
BL-BM-14	Pipette Accessory Testing Kit .....	1,600.00

<sup>2</sup> BM-08 and the standard Quick USB interface cannot be used at the same time.



Option BM-14 Pipette Testing Kit